

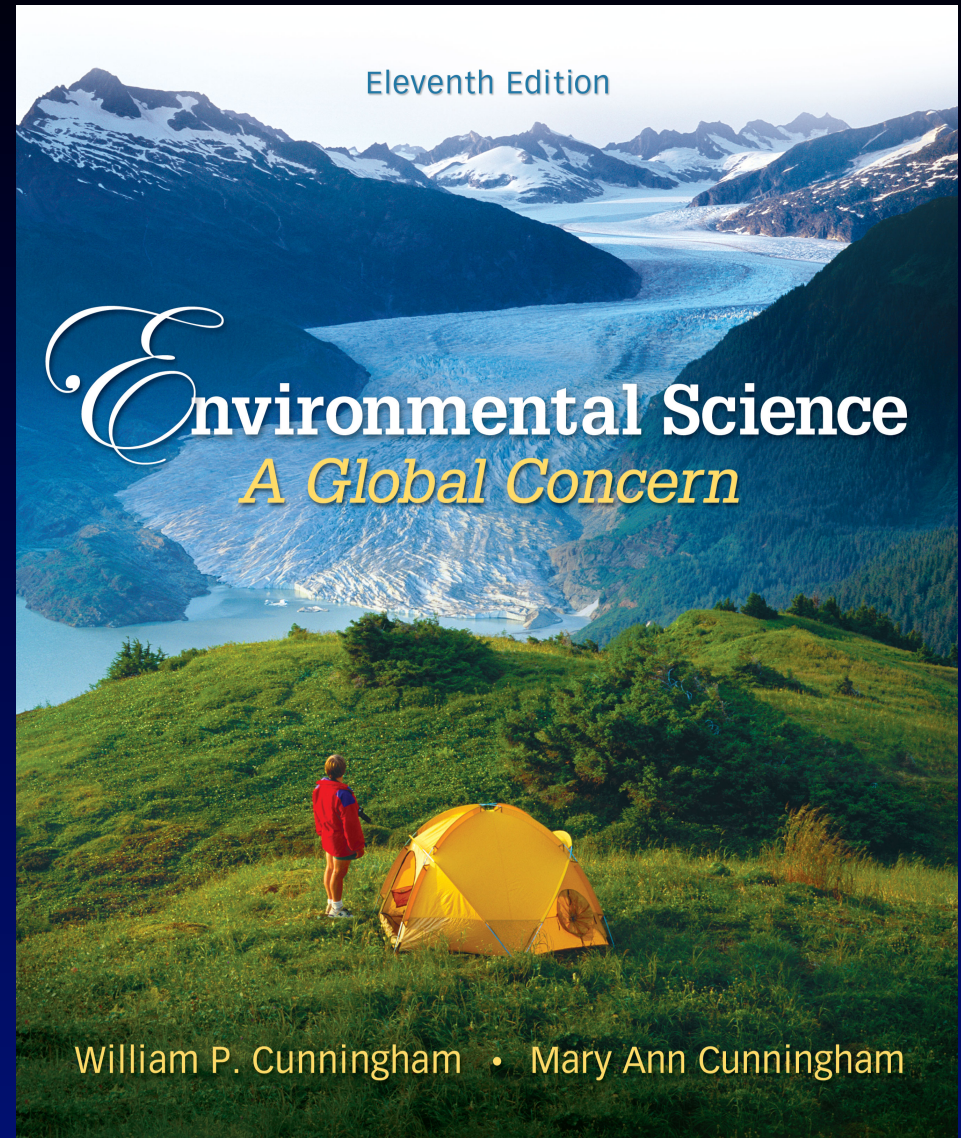
# Chapter 01

## Lecture Outline\*

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**\*See PowerPoint Image Slides for all  
figures and tables pre-inserted into  
PowerPoint without notes.**





# Understanding our Environment

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# Outline

- Introduction
- Current Conditions
- Historical Perspectives
- A Divided World
- Sustainable Development
- Indigenous People
- Environmental Ethics
- Environmental Justice
- Environmental Racism

# Introduction

- Humans have always inhabited both the natural world and the social world.
- **Environment:**
  - ❖ Circumstances or conditions that surround an organism or groups of organisms
  - ❖ The complex of social or cultural conditions that affect an individual or community

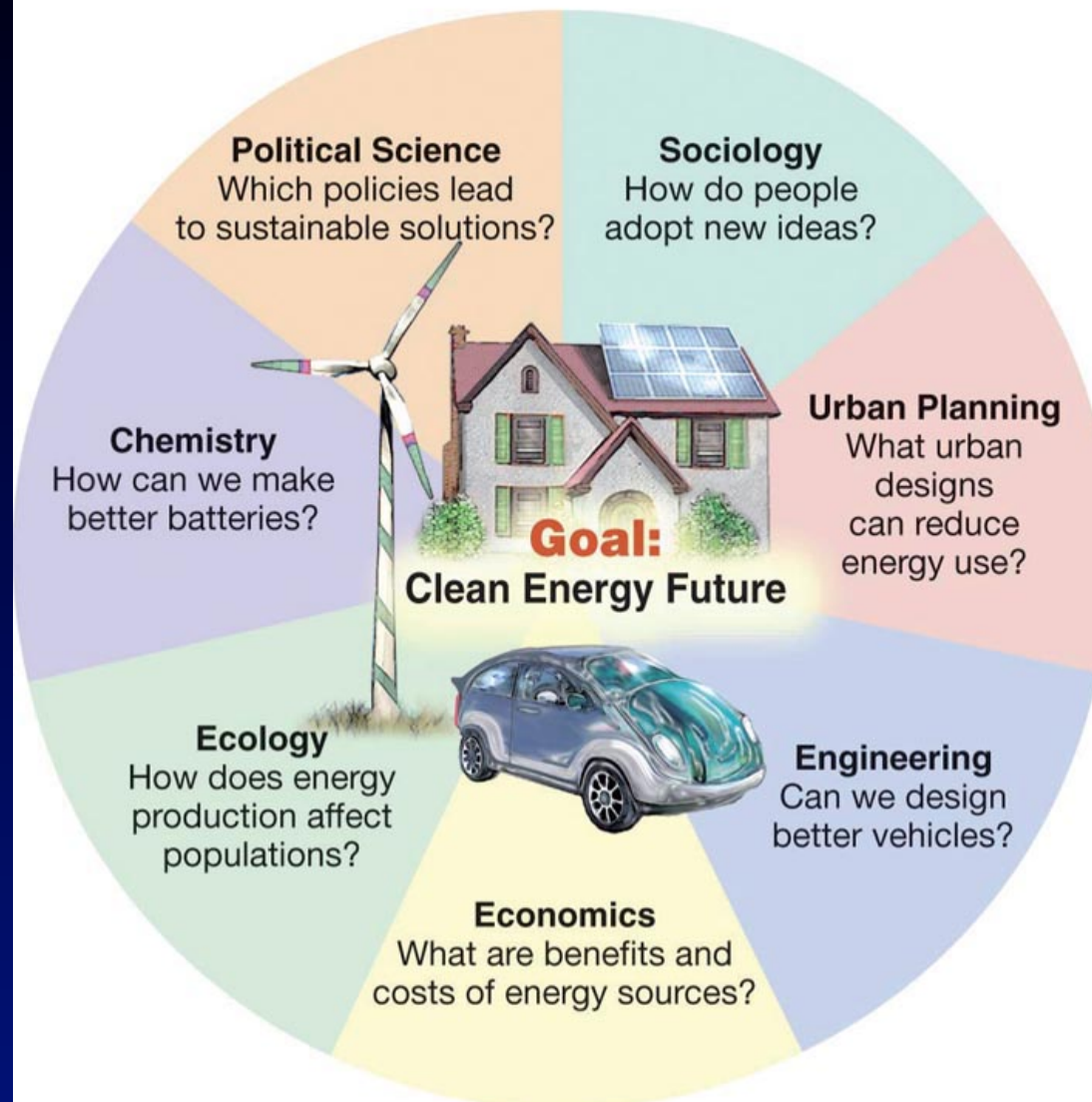
# Introduction

- **Environmental Science:** Systematic study of our environment and our proper place in it
  - ❖ Interdisciplinary
  - ❖ Integrative
    - Natural Science
    - Social Science
    - Humanities
  - ❖ Mission oriented



# Knowledge Which Contributes to the Understanding of Environmental Science

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# Current Conditions

- **Human Population > 6.5 Billion**
  - ❖ **Water:** water quantity and quality issues may be the most critical issues in the 21st century.
  - ❖ **Food:** food is inequitably distributed across the globe and 2/3 of agricultural lands show signs of degradation.
  - ❖ **Climate Change & Energy:** burning fossil fuels causes global climate change and fossil fuel reserves are diminishing.
  - ❖ **Air Pollution:** air quality has worsened in many areas, especially southern Asia and India.
  - ❖ **Biodiversity:** species are being lost at a rapid rate

## Signs of Hope

- Progress has been made on many fronts.
  - ❖ **Population Stabilization:** Human birth rates have stabilized in most industrialized countries.
  - ❖ **Health:** Incidence of life-threatening diseases has been reduced in most countries.
  - ❖ **Habitat Conservation:** Deforestation has slowed & habitat protection has improved in some areas.
  - ❖ **Renewable Energy:** Progress is being made in the transition to renewable energy sources.
  - ❖ **Freedom:** Democracy is spreading around the world allowing local people to govern themselves.
  - ❖ **International Cooperation:** helps solve global environmental problems



# Historical Perspective

- Four Distinct Stages

- ❖ Pragmatic Resource Conservation
- ❖ Moral and Aesthetic Nature Preservation
- ❖ Concern about Health and Ecological Damage
- ❖ Global Environmental Citizenship

*These stages are not mutually exclusive;  
parts of each persist today in the environmental  
movement.*

# Pragmatic Resource Conservation

- George Perkins Marsh - *Man and Nature* published in 1864
  - Influenced Theodore Roosevelt and his conservation advisor, Gifford Pinchot
    - Pragmatic Utilitarian Conservation
      - “Greatest good for the greatest number for the longest time”
      - Multiple Use Policies of USFS

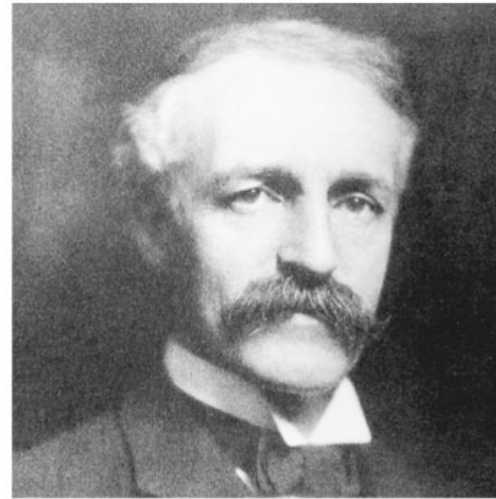
# Ethical and Aesthetic Nature Preservation

- John Muir - President Sierra Club
  - ❖ Nature deserves to exist for its own sake - regardless of degree of usefulness to humans.  
(*Biocentric Preservation*)

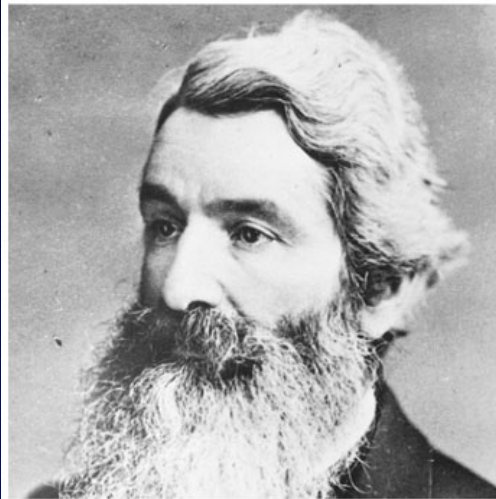
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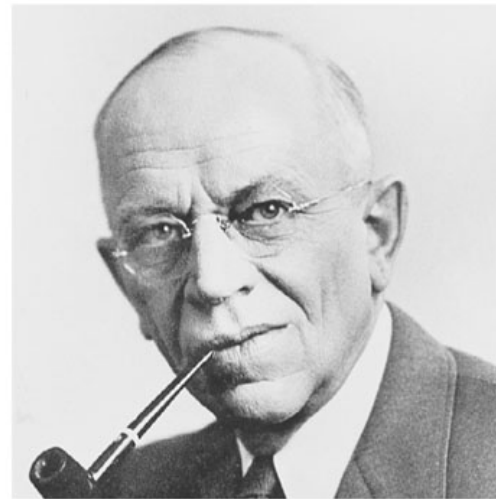
(a) President Teddy Roosevelt  
Courtesy of the Bancroft Library, University of  
California, Berkeley



(b) Gifford Pinchot  
Courtesy of Grey Towers National Historic  
Landmark



(c) John Muir  
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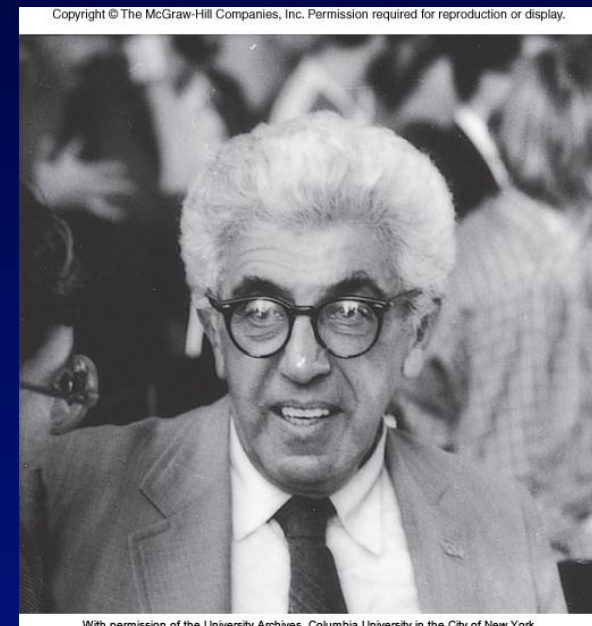
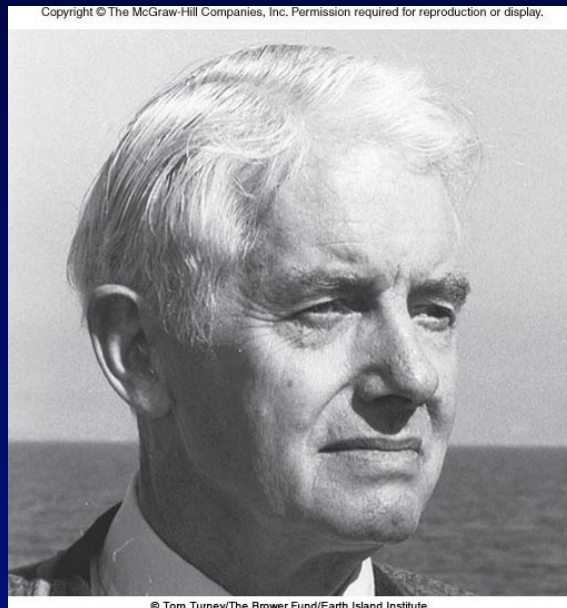
(d) Aldo Leopold  
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# Modern Environmental Movement

- The industrial expansion after WW II added new concerns to the environmental agenda.
  - ❖ Rachel Carson – awakened the public to the environmental threat posed by pesticides in her book *Silent Spring* (1962)
  - ❖ David Brower—introduced the use of litigation, regulatory intervention, and the use of mass media to environmental activists.
  - ❖ Barry Commoner—an activist scientist who spoke out about environmental hazards.

# Modern Environmental Leaders



# Global Environmentalism

- Modern media now allow for increased international communications. Local and regional environmental leaders increasingly have a worldwide impact.

## Global Environmental Leaders:

- Wangari Maathai--Kenya
- Yu Xiaogang—China
- Muhammad Yunus—India
- Gro Brundtland--Norway



## A Divided World

- World Bank estimates more than 1.4 billion people live in extreme poverty earning < \$1 (U.S.) per day.
- Poor are often both victims and agents of environmental degradation. They are trying to meet their present survival needs at the cost of long term sustainability.
- Cycle of poverty continues over generations as people who are malnourished and ill cannot work productively and raise healthy children.



# A Divided World

- About 1/5 of the world's population lives in countries with per capita income > \$25,000 per year (U.S.). The other 4/5 lives in middle or low income countries.
- Gap between rich and poor continues to increase.
- The gap affects many quality of life indicators.

# Quality of Life Indicators

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**TABLE 1.1**

## Quality of Life Indicators

	Least-Developed Countries	Most-Developed Countries
GDP/Person <sup>1</sup>	(U.S.)\$329	(U.S.)\$30,589
Poverty Index <sup>2</sup>	78.1%	~0
Life Expectancy	43.6 years	76.5 years
Adult Literacy	58%	99%
Female Secondary Education	11%	95%
Total Fertility <sup>3</sup>	5.0	1.7
Infant Mortality <sup>4</sup>	97	5
Improved Sanitation	23%	100%
Improved Water	61%	100%
CO <sup>2</sup> /capita <sup>5</sup>	0.2 tons	13 tons

<sup>1</sup>Annual gross domestic product

<sup>2</sup>Percent living on less than (U.S.)\$2/day

<sup>3</sup>Average births/woman

<sup>4</sup>Per 1,000 live births

<sup>5</sup>Metric tons/yr/person

**Source:** UNDP Human Development Index, 2006.

# Is There Enough for Everyone?

- Rich nations consume an inordinate share of the world's resources and produce an unsustainable amount of pollution.
- The U.S. makes up 4.6% of the world's population, but consumes 25% of all oil production and generates 50% of all toxic wastes in the world.
- If all the residents of China were to match American consumption, it would take four extra planet Earths to support them using current technology.

## Economic Progress

- Over the past 50 years, the world's Gross Domestic Product (GDP) increased from \$2 trillion to \$22 trillion.
- Since WW II, average real income in developing countries has doubled and life expectancy has increased by 30%.

**BUT**

- The worldwide gap between rich and poor has widened.



# Sustainable Development

- “Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”
  - ❖ Benefits must be available to all humans, rather than to a privileged few.
  - ❖ Economic growth alone is not enough. Political stability, democracy, and equitable economic distribution are needed to ensure that all benefit.

# Sustainable Development

Many ecologists view continual growth as impossible in the long run due to limits imposed by non-renewable resources and the capacity of the biosphere to absorb wastes. Others argue that through the use of technology and social organization, we can manage to meet our needs and provide long-term (but not infinite) growth.

# Indigenous People

- Indigenous (native) people are often the least powerful, most neglected people in the world.
  - ❖ At least half the world's 6,000 distinct languages are dying.
  - ❖ Indigenous homelands may harbor vast percentage of world's biodiversity.
  - ❖ Recognizing native land rights and political rights may often be a solid ecological safeguard as indigenous people have a rich knowledge of local habitats.

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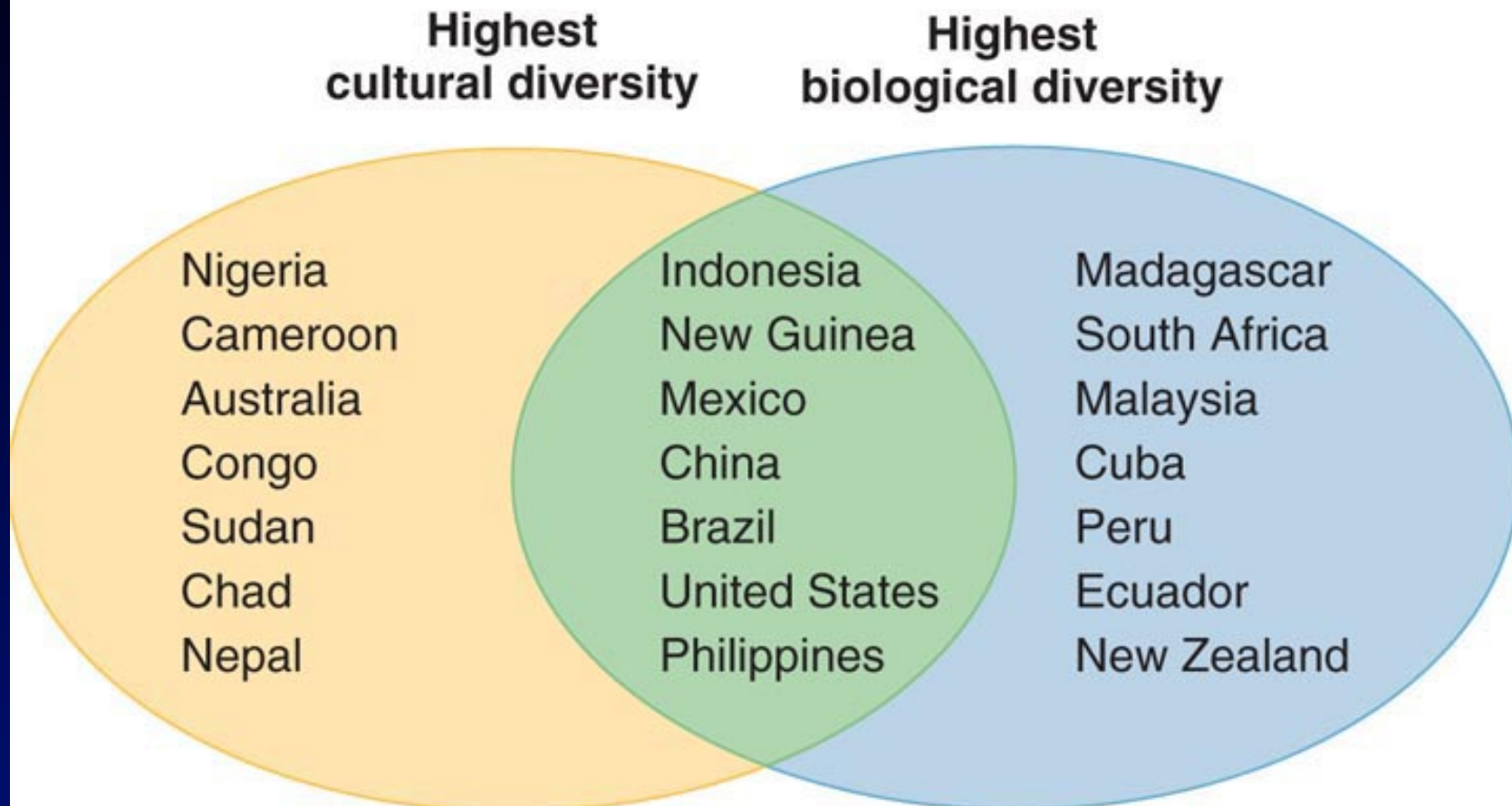


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# Biological and Cultural Diversity are Linked

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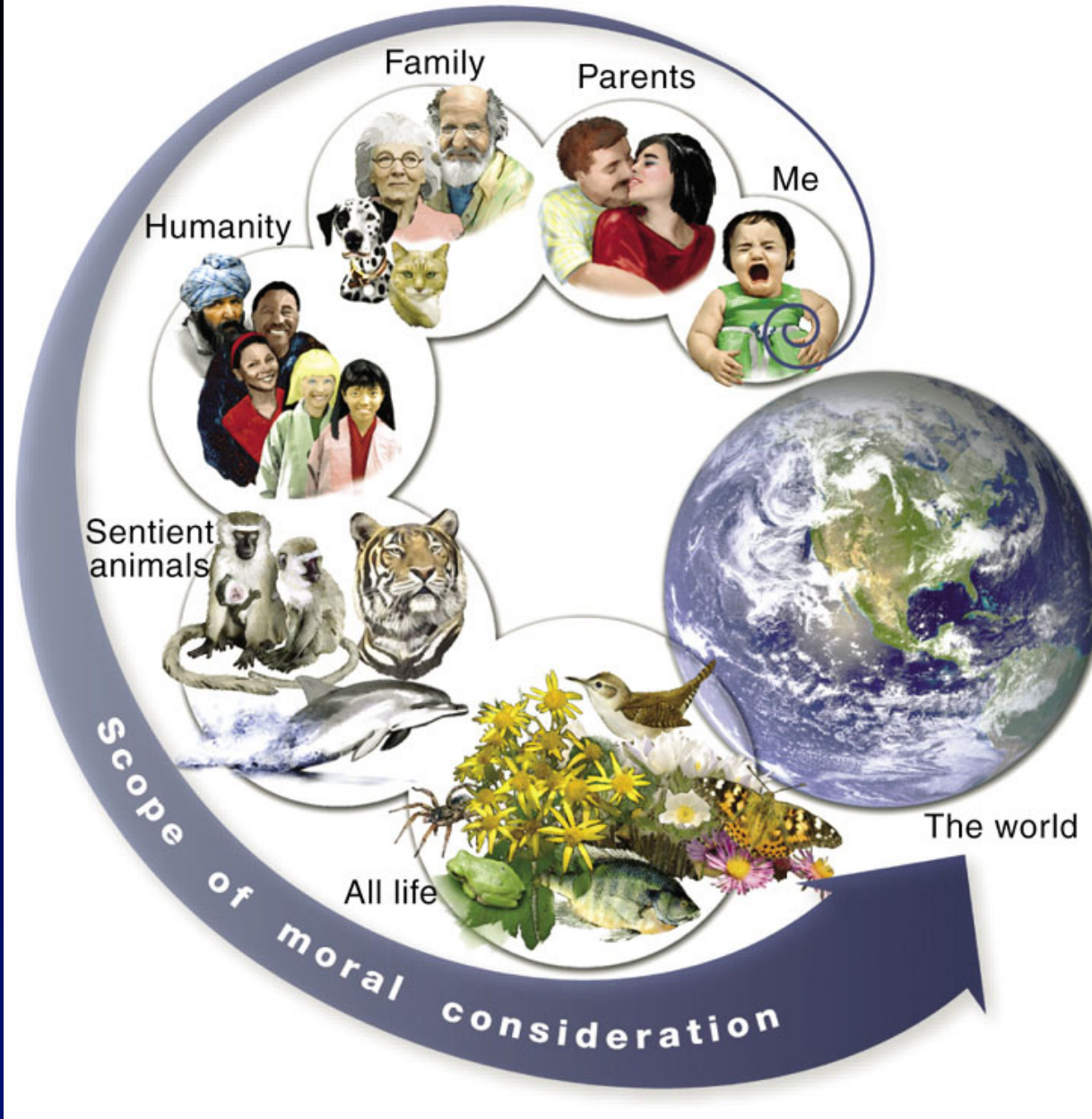
Source: Norman Myers, Conservation International and Cultural Survival Inc., 2002

# Environmental Ethics & World Views

- **Ethics** is a branch of philosophy concerned with what actions are right and wrong.
- **Environmental ethics** deals with our moral obligations to the world around us.
- **Worldviews** - sets of basic beliefs, images and understandings that shape how we see the world around us. Worldviews also determine what questions are valid to ask.
- *How we relate to the environment depends largely on our values and world view.*

# Who or What has Moral Value?

- **Moral extensionism** - extending moral values to others
  - ❖ Should moral extensionism include granting some degree of moral value to animals, plants and the environment?
- **Value** - a measure of the worth of something
  - ❖ Inherent value - intrinsic or innate worth
  - ❖ Instrumental value - items have worth only because they are valued by another person



# Religious Traditions

- Ethical and moral values are often rooted in religious traditions.
- *Stewardship* - taking care of the resources we are given.
- Calls for both environmental stewardship *and* human domination over nature can be found in most world religions.
- Increasingly, many churches and religious leaders today are promoting faith based environmental stewardship and conservation.

# Environmental Justice

- Because of their economic status, minorities in the US and globally may be subjected to a disproportionate amount of environmental health risks in their neighborhoods and work places.
- The field of *environmental justice* combines civil rights with environmental protection to demand a safe and healthy environment for everyone.



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# Environmental Racism

- Environmental Racism is an inequitable distribution of environmental hazards based on race.
- Lead poisoning in children from drinking water from aging plumbing or eating paint chips in older buildings is an example of this phenomenon.
- *At all income levels*, black children are 2 to 3 times more likely suffer lead poisoning in the US than are white children.

# Toxic colonialism

- **Toxic colonialism** is the practice of targeting poor communities or communities of color in developing nations as waste disposal areas.
- For example, Native Americans have been subject to numerous attempts to set up hazardous waste sites, landfills or incinerators on their reservations.



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